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**OBJECTIVE:** Introduction to the basics of structural design in reinforced concrete and structural steel using current design codes. Students are expected to become proficient in this basic knowledge.

**TIME:** Tu, Th 2<sup>nd</sup> and 3<sup>rd</sup> Periods

**TEXTS :** Concrete:  
 ACI 318-02, *Building Code Requirements for Structural Concrete*, American Concrete Institute, 2002 (Available for purchase thru instructor during first week of class)  
OR  
 Portions of ACI 318-02 (Available for purchase through ASCE)

Steel:  
*LRFD Manual of Steel Construction*, 3<sup>rd</sup> edition, AISC (See instructor to purchase)  
OR  
 Portions of Manual of Steel Construction (Available for purchase through ASCE)

General:  
 Class Notes and Supplemental Material (Available for purchase through ASCE)

**GRADING CRITERIA:**

(7) Bi-Weekly Quizzes	65%	(11, 25 Sept; 9, 23 Oct; 6, 20 Nov; 9 Dec) - Dates Tentative
Final Quiz	15%	Date To Be Determined Scheduled: Thursday, 18 December - 12:30-2:30 PM Alternate: Monday, 15 December - 7:30-9:30 AM
Homework	15%	
Attendance	05%	

**MAXIMUM GRADING SCALE:** (May be relaxed at the option of the instructor)

93 - 100	A
90 - 92.99	B+
85 - 89.99	B
83 - 84.99	C+
77 - 82.99	C
75 - 76.99	D+
70 - 74.99	D
00 - 69.99	E

## **RULES FOR BETTER LIVING:**

1. Attendance at lecture is mandatory and timeliness is important. Absences and tardiness will be considered by the instructor as a lack of professional motivation, and will be dealt with accordingly at the time grades are assigned. **Be on-time to class.** The instructor will start class on-time. The instructor will endeavor to end class on-time.
2. Attendance at lecture is mandatory. Attendance will be taken. Grade will be based on the percentage of class sessions attended. For basis of computing grades, there will be no “excused absences”.
3. Each lesson requires preparation by the student prior to the lecture. ACI 318 / Manual of Steel Construction are required for all lectures.
4. Quiz Information
  - a. Bi-weekly quizzes are open book and open note (but closed neighbor!) Any material covered up to the previous class meeting date is “fair game” for the quiz.
  - b. The final quiz is closed book / closed note / closed neighbor. The final quiz will be a comprehensive, multiple choice exam without calculators.
5. Homework will be assigned weekly. Working with fellow students on homework will be allowed as “self-help”, but the final homework which is turned in must represent the work of the individual student. Do not copy another student’s work. Homework will be compared and violations will be dealt with. Homework will be due one week from the date of the assignment, at the beginning of the 3<sup>rd</sup> period class meeting. **Late homework will be accepted up to 3 days late with a 25% penalty.**
  - a. Homework will be submitted on engineering computation paper or as computer output (**DO NOT RE-USE PAPER!**) **ONLY ONE PROBLEM PER SHEET**. Number and label all pages. **Work neatly. All work will be graded on the basis of content and neatness.** Use straightedges, reasonable scales, use pencil (that means also using an eraser), and print and label clearly. Reference equations to ACI 318 or AISC (i.e.: ACI Eqn. 10-2). List assumptions or rationale for your work. **Sloppy or difficult to follow work will be returned ungraded. No exceptions.**
6. No make-up work will be allowed, except in cases of emergencies or civic responsibilities (jury duty, etc.), provided that the instructor is notified by e-mail in advance. Provisions for make-up work will be determined on a case-by-case basis.
7. Some class communication will be by means of e-mail. Check your e-mail regularly (at least daily). Keep the instructor informed of any changes to your e-mail address. Failure on the part of the student to keep-up with e-mail communications is not excusable.

## **IMPORTANT UNIVERSITY INFORMATION:**

### *Academic Honesty:*

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

### *Accommodations for Students with Disabilities:*

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

## **TENTATIVE LECTURE SCHEDULE**

(Subject to modification) (Quizzes are not included in lecture numbering)

### **LECTURES:**

#### General

1. Introduction to Course
2. Introduction to Structural Engineering Profession
3. Design Methodology - Design Codes - Loads and Resistance
4. Design Methodology - Design Codes - Loads and Resistance
5. Design Methodology - Design Codes - Loads and Resistance
6. Review of Elastic and Plastic Behavior of Materials

#### Concrete

7. Concrete Material Properties
8. Concrete Material Properties / Introduction to ACI 318
9. Flexure - Strength Design
10. Flexure - Strength Design
11. Singly Reinforced Rectangular Sections
12. Singly Reinforced Rectangular Sections
13. Doubly Reinforced Rectangular Sections
14. One Way Slabs, Temperature Steel
15. Analysis under Service Loads
16. Analysis under Service Loads
17. Deflections
18. Cracking
19. Shear and Diagonal Tension
20. Shear and Diagonal Tension
21. Shear and Diagonal Tension
22. Shear and Diagonal Tension
23. Bond, Anchorage, Development Length
24. Anchorage, Development Length
25. Short Columns
26. Short Columns
27. Short Columns
28. Short Columns

## Steel

29. Introduction to AISC Specification
30. Steel Material Properties
31. Introduction to Column Behavior
32. Column Analysis
33. Column Analysis
34. Column Analysis
35. Column Design
36. Column Design
37. Simple Beam Bending - Shape Factor, Compact Section, Plastic Action
38. Simple Beam Bending - Beam Tables, Local Buckling, Non-Compact Flanges
39. Bending Members - Plastic Action and Non-Linear Analysis
40. Lateral-Torsional Buckling
41. Laterally Unbraced Beams
42. Laterally Unbraced Beams
43. Continuous Beams
44. Beams - Design for Shear, Deflection
45. Introduction to Tension Members
46. Introduction to Tension Members
47. Introduction to Bolted Connections
48. Introduction to Welded Connections

## General

49. Closure

This short paper by Professor Yao from Texas Tech is a pretty good summary of my thoughts and philosophy on grades. I could not have said it better than this.

**Sputo**

## **ON GRADES AND GRADING**

by James T. P. Yao for his students and interested colleagues

The grade in a given course is a measure of the student's performance in that endeavor. The overall grade point averages are indeed important considerations for all students. When I was a student at the University of Illinois in Urbana-Champaign, I did care about my grades at that time. However, I never complained about any of my grades though, at times, I felt that the grade I received in a particular course might not be fair. The fact is, on the average, the overall grade point average did reflect the knowledge gained and the effort that I put into my college education. There were courses for which I thought that I deserved a better grade than the one on my record. On the other hand, I also had grades that were better than what I expected and/or deserved. In the long run, they all averaged out at the end of my college career. Most importantly, I learned from each professor and from each course that I had.

A few years after I graduated, I forgot all my grades. No one has ever asked for my grades just a few years after I graduated from college. To date, however, I have kept all the basic knowledge that I gained from my college education. Especially, the method of learning new things on my own has been useful. If the students aim at learning as much as they can from each course and each professor, the good grades will come as a result of their diligent work, on the average. On the other hand, if the students waste their time arguing about their grades, they will lose time for studying new lessons and thus hurt their future grades.

As a teacher, I try very hard to be fair and consistent in grading student papers. The student will get a perfect score if he/she gives a correct answer. If the answer is not correct, the teacher is the one who judges how serious the error is and assigns a partial score accordingly. As a student, I had several professors who did not give partial scores. The reason was that, the engineering system could fail with the wrong answer, no matter how close the answer is to the correct one (e.g., exactly the same number but with a wrong sign). I do not agree with that policy but respect their judgement in those courses. In any event, partial scores are subjective depending on the experience and viewpoints of the individual teachers. It is counter-productive to argue about it.

Please be careful in doing your homework, tests, and other assignments. People's lives and properties will depend on your work someday in the near future. Try to learn as much as you can while you are in school. Communicate with your teachers and classmates frequently, and concentrate on the learning process. With knowledge, you will become a successful and proud engineer soon. **HAVE KNOWLEDGE, WILL SUCCEED!**